

APPENDIX I
METHOD FOR DETERMINING STATIC PULL-OUT STRENGTH
BEFORE AND AFTER REHEATING

(Normative)

I1 SCOPE This Appendix sets out a method for determining the strength required to pull cords from the carcass of conveyor belting before and after reheating.

I2 PRINCIPLE The force required to extract cords from a unit length of belting is determined by the application of a steady, controlled rate of strain using a tensile testing machine.

I3 APPARATUS

I3.1 Suitable tensile testing machine—capable of exerting steady rates of strain without interruption and of measuring the test force with an error of not more than ± 2 percent. The rate of separation of the jaws of the tensile testing machine shall be 100 ± 10 mm/min.

I3.2 Press—consisting of two plates which are thermoregulated at $145 \pm 5^\circ\text{C}$ and capable of applying a surface pressure between 1 MPa and 5 MPa.

NOTE: An adequate surface pressure can be obtained using spacers of a thickness of the test piece minus 1 ± 0.5 mm between the plates of the press.

I4 TEST PIECES Three test pieces shall be cut from a full thickness section of the belting containing five cords. Test pieces shall be cut to the arrangement shown in Figure I1 or Figure I2. The test length (L_1) shall be 50 ± 2 mm. The covers may be removed 100 mm from the end of the test piece to facilitate the use of conventional grips.

I5 PROCEDURE

I5.1 Without reheating Mount each test piece centrally in the jaws of the tensile testing machine and operate the machine until failure occurs.

I5.2 With reheating Pre-condition the three test pieces between the two plates of the press for 150 ± 1 min. Mount each test piece centrally in the jaws of the tensile testing machine and operate the machine until failure occurs.

I6 CALCULATION The unit pull-out strength for each test piece shall be calculated from the following equation:

$$\text{Unit pull-out strength (kN/m)} = \frac{\text{Pull-out force (kN)} \times 1000}{\text{Measured test length } L_1 \text{ (mm)}}$$

I7 REPORT The report shall include the following information:

- (a) Average pull-out strength of the three test pieces, before reheating, in kilonewtons per metre.
- (b) Average pull-out strength of the three test pieces, after reheating, in kilonewtons per metre.
- (c) Reference to this Appendix, i.e. AS 1333, Appendix I.

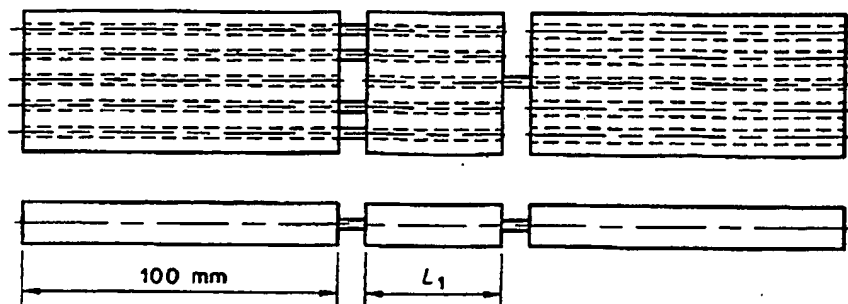
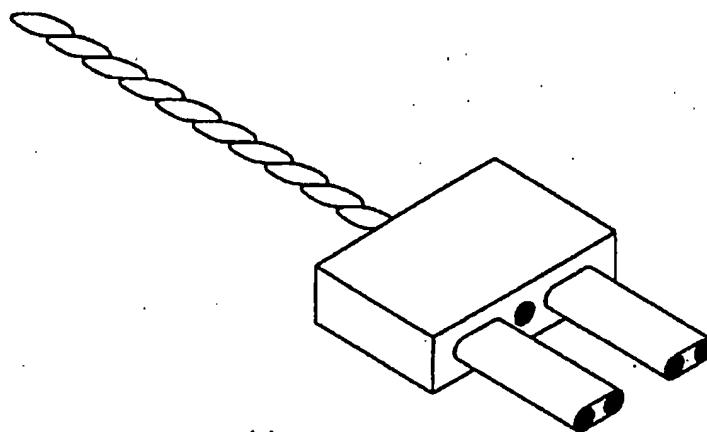
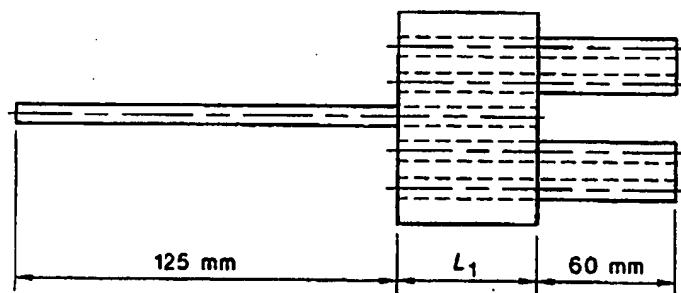


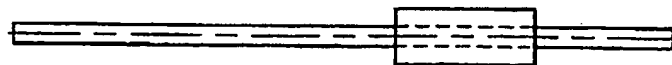
FIGURE 11 TEST PIECE FOR PULL-OUT STRENGTH



(a) Isometric view



(b) Top view



(c) Front view

DIMENSIONS IN MILLIMETRES

FIGURE 12 TEST PIECE FOR PULL-OUT STRENGTH (Alternative shape)

APPENDIX K
METHOD FOR DETERMINING DYNAMIC CORD PULL-OUT
FATIGUE RESISTANCE

(Normative)

K1 SCOPE This Appendix sets out the method for determining the dynamic strength of the cord-to-rubber bond in a steel cord reinforced belt.

K2 PRINCIPLE The dynamic strength of the cord-to-rubber bond is determined by applying a cyclic load to a test piece for a minimum number of cycles, or till failure of the bond occurs.

K3 APPARATUS A suitable testing machine which can accommodate the test piece and which is capable of applying a steady cyclic tensile loading, is required. The cyclic load ranges from 3.6 percent to 36 percent of the nominal static pull-out strength for a given cord diameter (see Figure K1).

K4 TEST PIECE A test piece shall be cut from a full thickness section of the belting containing five cords. The test piece shall be cut to the arrangement shown in Figure I1 or Figure I2. The test length (L_1) shall be 100 ± 2 mm. The covers may be removed 100 mm from the end of the test piece to facilitate the use of conventional grips.

K5 PROCEDURE The procedure shall be as follows:

- (a) Mount the test piece centrally in the jaws of the machine.
- (b) Steadily apply the cyclic load and release it with a pause at the high and low levels (see Figure K1). (The time for one completed cycle shall be between 5 s and 10 s.)
- (c) Continue the test until the sample fails or 10 000 cycles are completed, whichever comes first.

K6 REPORT The following information shall be reported:

- (a) Whether the sample failed, i.e. there was evidence of cord pull-out, before 10 000 cycles were completed.
- (b) The nominal static pull-out strength for the cord being tested.
- (c) The maximum and minimum load levels.
- (d) A reference to this Appendix, i.e. AS 1333, Appendix K.

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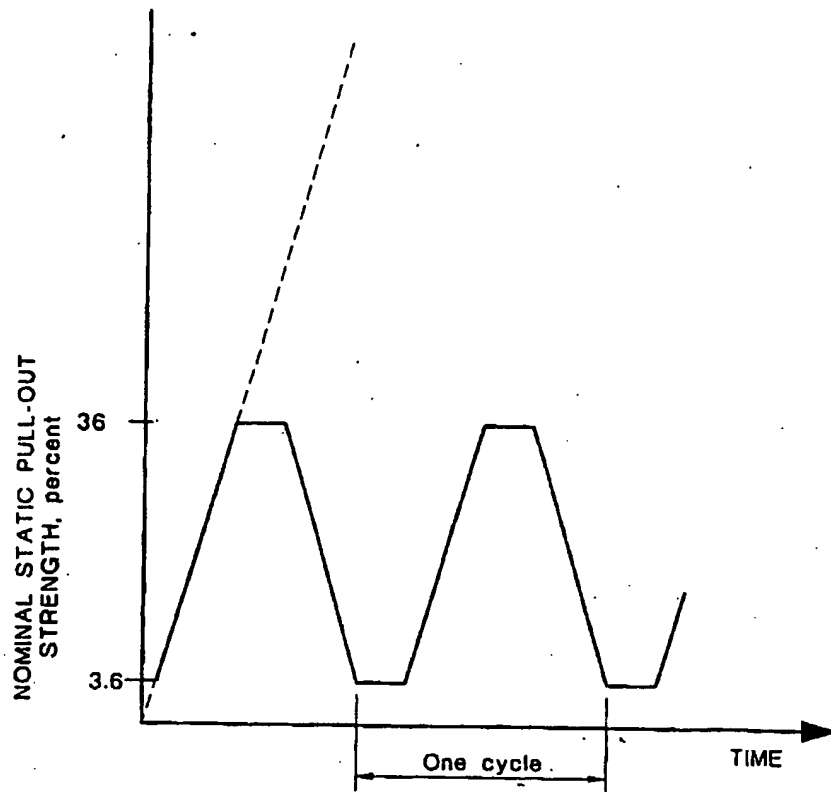


FIGURE K1 TYPICAL CYCLIC LOADING PATTERN

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